STORMS AND WEATHER WARNINGS

WASHINGTON FORECAST DISTRICT

On the 1st, small-craft warnings were displayed from Boston to Wilmington in connection with a disturbance of considerable intensity over Ontario, and again on the 5th from Nantucket to Norfolk. On the evening of the 6th, when a disturbance of marked intensity was over Lake Superior and a second center of increasing intensity was south of Nantucket, storm warnings were ordered from Sandy Hook to Boston for fresh-to-strong northeast, shifting to strong southwest, winds. Winds were fresh to strong but did not reach gale force. On the 15th small-craft warnings were ordered from Delaware Breakwater to Portland, Me., for fresh-to-strong shifting winds.

Warnings for light frost were issued on the 3d for western New York and western Pennsylvania and on the 20th for Vermont, New Hampshire, and the interior of Maine.—*R. H. Weightman.*

CHICAGO FORECAST DISTRICT

Storm warnings for the Great Lakes.—For a summer month June, 1926, was unusually stormy on the Great Lakes, no fewer than six disturbances of major importance having occurred. Either storm or small-craft warnings had to be issued on more than one-half the days of the month.

On the morning of the 1st a strong disturbance from the Northwest was central north of Lake Huron. Southwest storm warnings were issued at that time for Lake Ontario and extreme eastern Erie, and small-craft warnings were advised for the remainder of Lake Erie, also for Lake Huron and extreme eastern Lake Superior. Small-craft warnings were continued on the following day on all the Great Lakes, since an area of high pressure had built up over the Northwest in the rear of the disturbance, thus increasing the gradient.

Another northwestern disturbance occurred on the 6–8th, for which general warnings were issued on the night of the 5th. As it reached the Lake Region it underwent a marked development, and moved so slowly across the Lakes that its influence covered a period of three days.

The third disturbance reached Lake Michigan on the night of the 13–14th. This storm appeared to have developed as early as the 7th over the interior of British Columbia, whence it moved slowly eastward and southward to the Middle West by the 11th. Thereupon one section passed eastward without storm development, while the second section continued to develop until the evening of the 13th, when it began to move northeastward from Kansas. This storm was most severe over Lake Michigan, where northeast and north gales occurred on the night of the 13–14th. The warnings issued in this connection were general in scope.

The next storm developed over the Rocky Mountain Plateau, and it appears to have been associated with its immediate predecessor. It reached the Upper Lake Region on the 16th and the Lower Lake Region the next day. Northwest warnings were issued for the Upper Lakes, and southwest warnings for the Lower Lakes. After reaching the Great Lakes, however, the storm lost force.

Storm No. 5 was one of apparently Rocky Mountain Plateau origin. The center moved eastward across the northern Great Plains, reaching the Upper Lakes on the night of the 20–21st. Thereupon a marked increase in intensity occurred. The warnings issued for this storm were general, and either verifying or near-verifying winds occurred throughout the Great Lakes Region.

The final disturbance came from the far Northwest. In fact, it is easy to trace the path backward to the North Pacific Ocean and Alaska. Small-craft warnings were issued. A few verifying velocities occurred, but these were mostly squall winds of short duration in connection with thunderstorms.

Frost warnings.—The month was cool over virtually the entire forecast district, but particularly in the eastern portion, where the mean temperature was among the lowest of record in recent years. Frost warnings were issued on the 2d, 3d, 4th, 8th, 18th, 19th, and 25th for more or less limited parts of the district. With one or two exceptions, these warnings were confined to the States of Minnesota, Wisconsin, and Michigan. The greatest utility of the warnings was in connection with the protection of the Wisconsin cranberry crop.—*C. A. Donnel.*

NEW ORLEANS FORECAST DISTRICT

Temperatures averaged near normal. Precipitation was decidedly irregular, being mostly above normal except in the extreme eastern portion of the district, where there was a marked deficiency. Much of the rain fell while areas of high pressure were advancing southeastward to the district or passing eastward over the upper Mississippi Valley.

No warnings were issued or required—*R. A. Dyke.*

DENVER FORECAST DISTRICT

Temperatures averaged well above normal throughout the district, except at Yellowstone Park and Roswell; in western Utah the excess amounted to more than 4° daily. Precipitation was deficient everywhere except at Cheyenne, where an unusually heavy downpour, accompanied by destructive hail, occurred on the night of the 14th, causing the monthly total to run more than three inches above normal. Droughty conditions prevailed in Montana until the 12th or 13th; thereafter showers were rather frequent. The usual summer condition of relatively low pressure over the Rocky Mountain and Plateau regions, with ill-defined centers of activity, prevailed until the 20th, when high pressure entered from the Pacific over Washington and Oregon, spreading southeastward and dominating the weather in this district until the 25th, when a deep LOW appeared over Alberta. Its passage eastward along the Canadian border was attended by unusually high temperatures over most of the district on the 25th, 26th, and 27th.

The only warnings issued were fire-weather warnings on the evening of the 13th and again on the morning of the 15th, for unusually strong winds in the forested regions of Arizona and New Mexico; both were justified.—*E. B. Gittings, jr.*

SAN FRANCISCO FORECAST DISTRICT

At the beginning of the month the Pacific high-pressure area, which had been weak and vacillating during April and May, showed indications of assuming normal proportions and stability. An off-shoot from it, pushing inland over the States of Oregon and Washington, called for predictions of rising temperature in those States on the 1st and this was amplified by the Seattle official into particular fire-weather advices for Washington specifying

the probability of decreasing humidity during the ensuing 48 hours. These advices were fully verified. In California the fire hazard grew slowly more acute, but as warnings of it had been issued on the 30th of May, no further special warnings were required. The fire hazard in Oregon and Washington was reduced somewhat on the 4th by the passage of a Canadian disturbance which raised humidities and lowered temperatures in those States, but this was quickly followed by a recurrence of high pressure and rising temperatures on the 5th which resulted in excessively warm weather throughout the interior of northern California and southwestern Oregon, and temperatures generally well above normal in other parts of Oregon, and in Washington and Idaho. Temperatures moderated very decidedly in California on the 7th due to the development of a depression over the Plateau. This depression gathered energy and moved northward bringing cooler weather to the remainder of the district on the 8th and 9th.

This type persisted for two weeks when the pressure fell in the Gulf of Alaska and the sub-permanent oceanic HIGH reverted to a southwest-northeast position between the Pacific States and Hawaii. At the same time the pressure rose over the North Pacific States calling for fire-weather warnings for northern California on the 20th. The fire hazard grew steadily more serious in that part of the State from then on, and it increased likewise in Oregon, Washington, and Idaho, the situation in the last-named States being adequately covered by the forecasts issued at San Francisco, Portland, and Seattle. Falling pressure over the northern Plateau and British Columbia brought lower temperatures and higher humidities to a large part of the district on the 29th and 30th, but severe lightning storms on those days, ignited hundreds of fires, and at the close of the month an unusually large number of serious conflagrations was being fought in the Sierra Nevada and Siskiyou mountains of California. Particular reference was made to the probability of thunderstorms in the mountains of California in the district forecasts of the 27th, 28th and 29th.—*T. R. Reed.*

RIVERS AND FLOODS

By H. C. FRANKENFIELD

The few floods which occurred in important rivers during June were generally well forecast and without damage of any kind.

An extensive crevasse occurred on the 14th in the levee of the Imperial Irrigation District south of the Pescadero Dam in the Colorado River, resulting in the flooding of a considerable area of land about Volcano Lake. No report of the extent of the damage was received.

A serious local flood, due to excessive precipitation in a thunderstorm, took place on the 11th in the Pecatonica River of north-central Illinois. One man was drowned and considerable unreported damage occurred to lowland crops in a restricted area.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
Mississippi drainage					
	Feet			*Feet*	
Tippecanoe, Norway, Ind.	6	13	14	6.6	June 14
Mississippi, Louisiana, Mo.	12	12	12	12.0	12
Des Moines, Ottumwa, Iowa	10	15	16	10.5	16
Illinois:					
Peru, Ill.	14	13	21	14.7	16,18,19
Beardstown, Ill.	14	17	30	15.4	21
Pearl, Ill.	12	17	23	12.9	21
Grand:					
Gallatin, Mo.	20	17	17	23.7	17
Chillicothe, Mo.	18	15	21	24.4	18
Grand, Thompsons Fork, Trenton, Mo.	20	18	18	20.6	18
Canadian, Logan, N. Mex.	4			6.6	19
West Gulf drainage					
Trinity:					
Dallas, Tex.	25	2	6	28.0	5
Trinidad, Tex.	28	7	10	30.7	9
Rio Grande, San Marcial, N. Mex.	2	(1)	22	4.5	May 27, 28
Pecos, Pecos, Tex.	11	1		13.4	June 1, 2
Pacific drainage					
Colorado:					
Fruita, Colo.	12	3	3	12.0	3
		5	9	12.5	8
Parker, Ariz.	7	(1)	(2)	10.2	12–13
Eagle, Eagle, Colo.	5	3	9	5.6	8
		13	13	5.3	13
		15	15	5.5	15
Gunnison, Delta, Colo.	9	1	13	10.0	5

[1] Continued from last month. [2] Continued at end of month.

MEAN LAKE LEVELS DURING JUNE, 1926

By UNITED STATES LAKE SURVEY

[Detroit, Mich., July 3, 1926]

The following data are reported in the "Notice to Mariners" of the above date:

Data	Lakes [1]			
	Superior	Michigan and Huron	Erie	Ontario
Mean level during June, 1926:	*Feet*	*Feet*	*Feet*	*Feet*
Above mean sea level at New York	600.50	578.41	571.22	245.31
Above or below—				
Mean stage of May, 1926	+0.32	+0.27	+0.05	−0.06
Mean stage of June, 1925	−0.72	−0.05	+0.04	−0.11
Average stage for June, last 10 years	−1.67	−2.15	−1.48	−1.32
Highest recorded June stage	−2.93	−5.19	−3.30	−3.32
Lowest recorded June stage	−0.72	−0.05	+0.04	+0.42
Average departure (since 1860) of the June level from the May level	+0.27	+0.23	+0.18	+0.14

[1] Lake St. Clair's level: In June, 1926, 573.79 feet.

THE EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS JUNE, 1926

By J. B. KINCER

General summary.—At the close of May, soil moisture was deficient over a considerable area in the central-northern portion of the country between the upper Mississippi Valley and the Rocky Mountains, and it was